



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2023-0027; Project Identifier AD-2022-01586-E; Amendment 39-22319; AD 2023-02-12]

RIN 2120-AA64

Airworthiness Directives; Continental Aerospace Technologies, Inc. Reciprocating Engines with a Certain Superior Air Parts, Inc. Intake Valve Installed

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for certain Continental Aerospace Technologies, Inc. (Continental) GTSIO-520, IO-470, IO-520, IO-550, IOF-550, LIO-470, LIO-520, LTSIO-520, O-470, TSIO-470, TSIO-520, TSIO-550, TSIOF-550, and TSIOL-550 model reciprocating engines with a certain Superior Air Parts, Inc. (SAP) cylinder assembly or intake valve installed. The affected cylinder assemblies and intake valves are installed as a replacement part under parts manufacturer approval (PMA) on certain affected Continental engines. This AD was prompted by three intake valve failures on reciprocating engines that resulted in engine damage and emergency landing or aborted takeoff. This AD requires replacement of the affected engine intake valve. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The FAA must receive comments on this AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to [regulations.gov](https://www.regulations.gov). Follow the instructions for submitting comments.
- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) by searching for and locating Docket No. FAA-2023-0027; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The street address for Docket Operations is listed above.

Material Incorporated by Reference:

- For service information identified in this final rule, contact Superior Air Parts, Inc., 621 S. Royal Lane, Suite 100, Coppell, TX 75019; phone: (800) 420-4727; email: sales@superiorairparts.com; website: [superiorairparts.com](https://www.superiorairparts.com).
- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at [regulations.gov](https://www.regulations.gov) by searching for and locating Docket No. FAA-2023-0027.

FOR FURTHER INFORMATION CONTACT: Justin Carter, Aviation Safety Engineer, Fort Worth ACO Branch, FAA, 10101 Hillwood Parkway, Fort Worth, TX 76177; phone: (817) 222-5146; email: justin.carter@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA received reports of three intake valve failures on GTSIO-520, IO-550, and TSIO-520 model reciprocating engines. The intake valve failure on the GTSIO-520

engine resulted in no loss of engine power, while the IO-550 engine experienced engine damage and aborted takeoff. The intake valve failure on the TSIO-520 engine resulted in engine damage and an emergency landing. Subsequent metallurgical analysis revealed that the intake valve material on SAP part number (P/N) SA539988, with lot number 19077 O, was out of specification and did not meet the minimum requirement for elongation; a condition that may cause rupture of the valve stem surface and valve head surface. SAP shipped the affected intake valves installed in cylinder assemblies between January 20, 2022 and March 22, 2022. SAP also shipped individual affected intake valves between January 20, 2022 and May 18, 2022. The affected cylinder assemblies and intake valves may be installed on certain Continental GTSIO-520-C, -D, -E, -F, -H, -K, -L, -M, and -N; IO-470-A, -C, -D, -E, -F, -G, -H, -J, -K, -L, -LO, -M, -N, -P, -R, -S, -T, -U, -V, and -VO; IO-520-A, -B, -BA, -BB, -C, -CB, -D, -E, -F, -J, -K, -L, -M, -MB, -N, -NB, and -P; IO-550-A, -B, -C, -D, -E, -F, -G, -L, -N, -P, and -R; IOF-550-B, -C, -D, -E, -F, -L, -P, and -R; LIO-470-A; LIO-520-P; LTSIO-520-AE; O-470-A, -E, -G, -G-CI, -H, -J, -K, -K-CI, -L, -L-CI, -M, -M-CI, -N, -P, -R, -S, -T, and -U; TSIO-470-B, -C, and -D; TSIO-520-A, -AE, -AF, -B, -BB, -BE, -C, -CE, -D, -DB, -E, -EB, -G, -H, -J, -JB, -K, -KB, -L, -LB, -M, -N, -NB, -P, -R, -T, -U, -UB, -VB, and -WB; TSIO-550-A, -B, -C, -E, -G, and -K; TSIOF-550-D, -J, and -K; and TSIOL-550-A, and -C model reciprocating engines. This condition, if not addressed, could result in failure of the engine, in-flight shutdown, and loss of the airplane. The FAA is issuing this AD to address the unsafe condition on these products.

FAA's Determination

The FAA is issuing this AD because the agency has determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed SAP Mandatory Service Bulletin MSB22-01 A, dated December 16, 2022 (SAP MSB22-01 A). This service information provides a listing of the affected cylinder assemblies and affected engines. This service information is

reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

AD Requirements

This AD requires the removal from service and replacement of any affected engine intake valve installed, except as discussed under “Differences Between the AD and the Service Information.”

Differences Between the AD and the Service Information

SAP MSB22-01 A specifies to remove and replace the affected intake valve before further flight, while this AD requires removal and replacement of the affected intake valve within 30 days from the effective date of this AD.

Justification for Immediate Adoption and Determination of the Effective Date

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for “good cause,” finds that those procedures are “impracticable, unnecessary, or contrary to the public interest.” Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies foregoing notice and comment prior to adoption of this rule because the urgency of the unsafe condition requires removal of any affected intake valve installed within 30 days from the effective date of this AD. The material used to manufacture the intake valves was out of specification and did not meet the minimum requirement for elongation, a condition that may cause rupture of the valve stem surface and valve head surface. Intake valve rupture could lead to failure of the engine, in-flight shutdown, and loss of the airplane. Three intake valve failures on affected reciprocating engines have already been reported, which resulted in engine damage, emergency landing, and aborted takeoff. As the affected intake valve must be replaced within 30 days from the effective date of this AD, the compliance time for the

required actions is shorter than the time necessary to allow for public comment and for the FAA to publish a final rule. Accordingly, notice and opportunity for prior public comment are impracticable and contrary to the public interest pursuant to 5 U.S.C. 553(b)(3)(B).

In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forego notice and comment.

Comments Invited

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2023-0027 and Project Identifier AD-2022-01586-E” at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to [regulations.gov](https://www.regulations.gov), including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Justin Carter, Aviation

Safety Engineer, Fort Worth ACO Branch, FAA, 10101 Hillwood Parkway, Fort Worth, TX 76177. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Regulatory Flexibility Act

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because the FAA has determined that it has good cause to adopt this rule without prior notice and comment, RFA analysis is not required.

Costs of Compliance

The FAA estimates that this AD affects 450 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Remove affected cylinder assembly	4 work-hours x \$85 per hour = \$340	\$0	\$340	\$153,000
Remove and inspect intake valve for existence of lot number 19077 O	4 work-hours x \$85 per hour = \$340	\$0	\$340	153,000

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection. The agency has no way of determining the number of aircraft that might need these replacements:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace affected intake valve	1 work-hours x \$85 per hour = \$85	\$106	\$191

The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this AD may be covered under warranty, thereby reducing the cost impact on affected operators.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866, and
- (2) Will not affect intrastate aviation in Alaska.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

- 2. The FAA amends § 39.13 by adding the following new airworthiness directive:

2023-02-12 Continental Aerospace Technologies, Inc.: Amendment 39-22319; Docket No. FAA-2023-0027; Project Identifier AD-2022-01586-E.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to Continental Aerospace Technologies, Inc. (Continental) GTSIO-520, IO-470, IO-520, IO-550, IOF-550, LIO-470, LIO-520, LTSIO-520, O-470, TSIO-470, TSIO-520, TSIO-550, TSIOF-550, and TSIO-550 model reciprocating engines listed in the Application Table, page 1, of Superior Air Parts, Inc. (SAP) Mandatory Service Bulletin MSB22-01 A, dated December 16, 2022 (SAP MSB22-01 A) with an installed:

- (1) SAP cylinder assembly having a part number (P/N) and serial number listed in Table 1 of SAP MSB22-01 A, installed on or after January 20, 2022; or
- (2) Cylinder assembly that was repaired and installed on or after January 20, 2022, with a SAP intake valve having P/N SA539988 and lot number 19077 O; or
- (3) SAP intake valve with P/N SA539988 and lot number 19077 O.

(d) Subject

Joint Aircraft System Component (JASC) Code 7160, Engine Air Intake System.

(e) Unsafe Condition

This AD was prompted by three intake valve failures on reciprocating engines that resulted in engine damage and emergency landing or aborted takeoff. The FAA is issuing this AD to prevent failure of the engine intake valve. The unsafe condition, if not addressed, could result in failure of the engine, in-flight shutdown, and loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For engines with an affected SAP cylinder assembly installed, as identified in paragraph (c)(1) of this AD, within 30 days from the effective date of this AD, remove the affected cylinder assembly and replace any affected intake valve with an intake valve that is eligible for installation.

(2) For engines with an affected repaired cylinder assembly installed, as identified in paragraph (c)(2) of this AD, within 30 days from the effective date of this AD, inspect the affected cylinder assembly for installation of any intake valve marked with lot number 19077 O. If, during any inspection required by this paragraph, an intake valve is identified with lot number 19077 O, before further flight, replace the affected intake valve with an intake valve that is eligible for installation.

(3) For engines with an affected SAP intake valve installed, as identified in paragraph (c)(3) of this AD, within 30 days from the effective date of this AD, remove the affected intake valve and replace with an intake valve that is eligible for installation.

(h) Definitions

(1) For the purpose of this AD, an “intake valve that is eligible for installation” is an intake valve that is not SAP P/N SA539988 and lot number 19077 O.

(i) No Reporting Requirement

Although SAP MSB22-01 A specifies to submit certain information and send certain parts to the manufacturer, this AD does not include that requirement.

(j) Special Flight Permit

Special flight permits, as described in 14 CFR 21.197 and 21.199, are prohibited.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Fort Worth ACO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (l) of this AD.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(l) Related Information

For more information about this AD, contact Justin Carter, Aviation Safety Engineer, Fort Worth ACO Branch, FAA, 10101 Hillwood Parkway, Fort Worth, TX 76177; phone: (817) 222-5146; email: justin.carter@faa.gov.

(m) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Superior Air Parts, Inc. Mandatory Service Bulletin MSB22-01 A, dated December 16, 2022.

(ii) [Reserved]

(3) For service information identified in this AD, contact SAP, 621 S. Royal Lane, Suite 100, Coppell, TX 75019; phone: (800) 420-4727; email: sales@superiorairparts.com; website: superiorairparts.com.

(4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: fr.inspection@nara.gov, or go to: www.archives.gov/federal-register/cfr/ibr-locations.html.

Issued on January 25, 2023.

Christina Underwood, Acting Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

[FR Doc. 2023-02152 Filed: 2/1/2023 8:45 am; Publication Date: 2/2/2023]